Creating world-class workforce by 2030

Social Impact Learnings 2021-2022

THE Steinman FOUNDATION

In Lancaster County, we strive for economic prosperity through workforce development. Our goal is to build a world-class workforce by 2030. This means having agile learners who maximize their human capital to benefit themselves and their employers. With a diverse pool of highly qualified workers, we can tap into a wealth of talent, enthusiasm, agency, and resilience. These qualities make up the foundation of a truly world-class workforce.

Letter from Our Director

Dear Lancaster County Community,

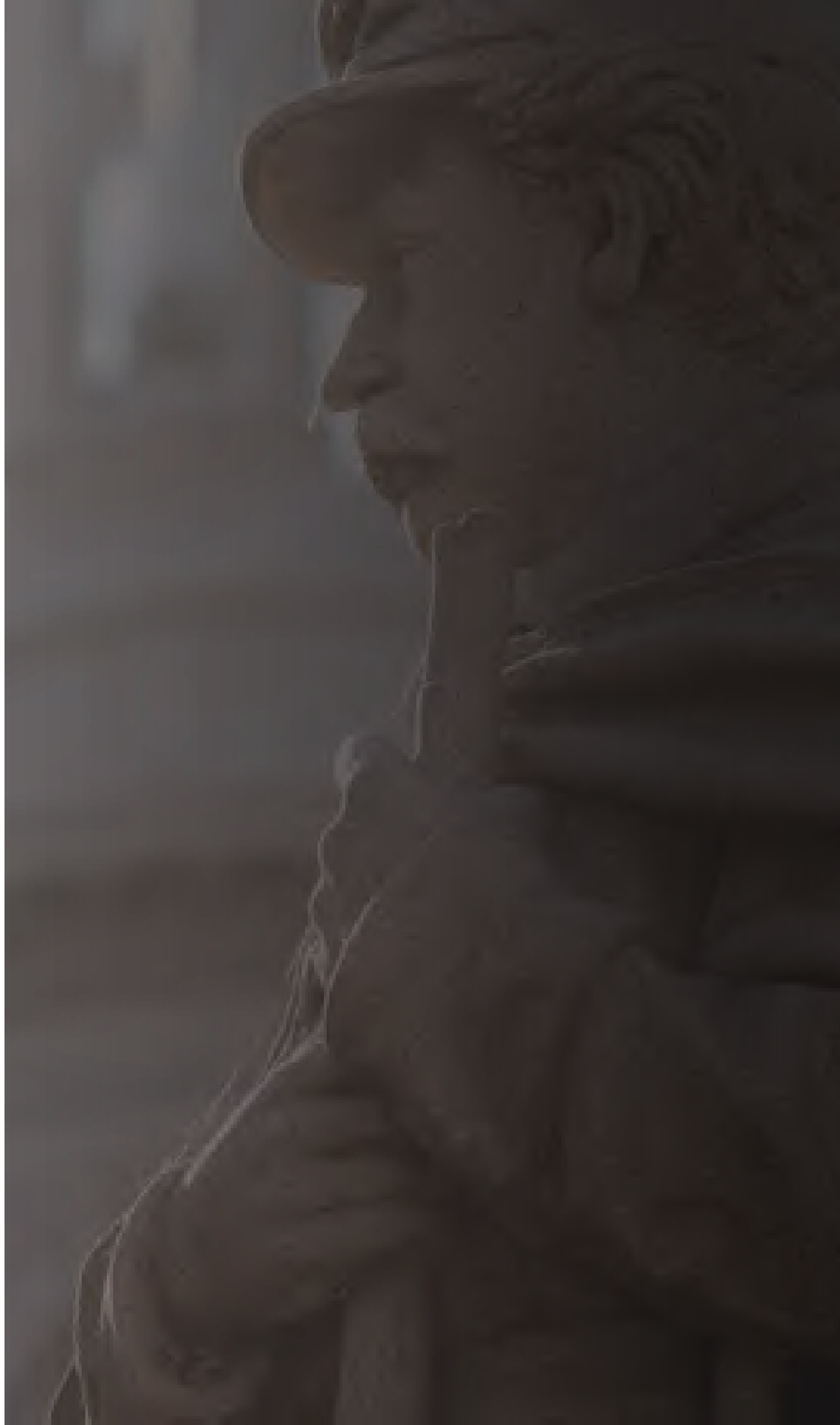
We are excited to begin the process of documenting the impact of the Lancaster County STEM Alliance (LCSA) through its programming and support within the County. The LCSA is committed to capturing data and better tracking the successes and challenges of its programming on an annual basis. This work will guide and inform future decisions and funding opportunities. We welcome your feedback and participation in this process. We extend a sincere thank you to the Impact Task Force, a subcommittee of the LCSA, who spearheaded this initiative. Their leadership and support have been invaluable.

As an impact advocate and longtime champion of STEM education, I hope you find this report insightful.

Sincerely,
Dr. Lauren Beal Executive Director of the LCSA

Impact Task Force:

- Lauren Beal, Executive Director, Lancaster STEM Alliance
- Andrew Garner, Program Coordinator, Lancaster STEM Alliance
- Willonda McCloud, Executive Director, Brightside Opportunities Center
- Judd Pittman, Director of K-16 Initiatives, Thaddeus Stevens College of Technology
- Mike Shirk, Chief Executive Officer, High Industries Inc. With advisory from Demetrius Roberts, Special Consultant for STEM and Computer Science at the PA Department of Education and Assistant Division Director for Teaching and Learning at IES.



Our Why

The problems

Today, technology trends indicate how well a region is keeping pace with resources and training supporting technical innovation and new jobs. Access to the Internet is also increasingly essential for participating in much of modern life.

STEM degrees are an essential component of the economy because STEM graduates workers tend to be more skilled and more highly paid than other workers. In addition, a region's future vitality is often tied to the strength of its STEM-related occupations. As a result, STEM graduates are in high demand and provide a talent pool for attracting organizations and firms depending on a similar scientific knowledge base and skilled workers.

In 2020, only 15% of residents in Lancaster County aged 25 or older had a science, technology, engineering, or math (STEM) degree. This was lower than the state rate of 22% and the national rate of 18%, respectively.

At the same time, in 2020, only 6% of jobs in Lancaster County were considered high-tech, which is below both the state and national rates of 10% and 11%, respectively.

STEM Alliance is on the mission to increase the number of K12 students who pursue STEM careers through community awareness, career exploration, project based learning, parent engagement, and out-of-school STEM learning in Lancaster County, PA.

2020

15%

of Lancaster County residents
> 25 yrs old had a STEM degree

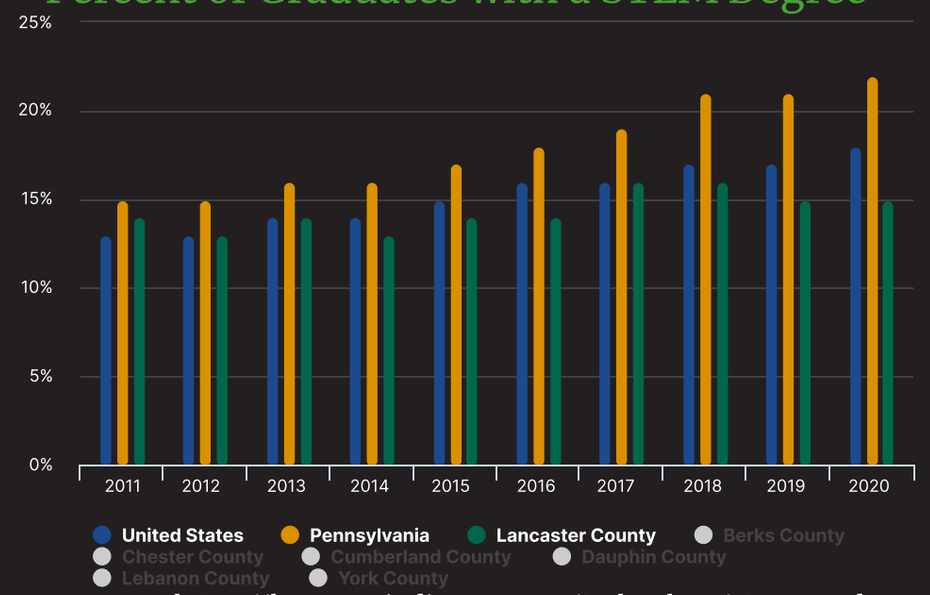
22% is state rate and
18% is national rate

6%

of jobs in Lancaster County were considered high-tech

State rate is 10% and
National rate is 11%

Percent of Graduates with a STEM Degree



source: https://lancasterindicators.com/technology/stem-graduates

About The Initiative

The Steinman Foundation is committed to carrying forward the vision of James Hale Steinman and John Frederick Steinman to improve the quality of life in communities across Lancaster County, Pennsylvania. The foundation focuses its efforts on four key areas: Early Childhood Education & Development, Economic & Workforce Development, Local Journalism and Media Literacy, and Community Stewardship.

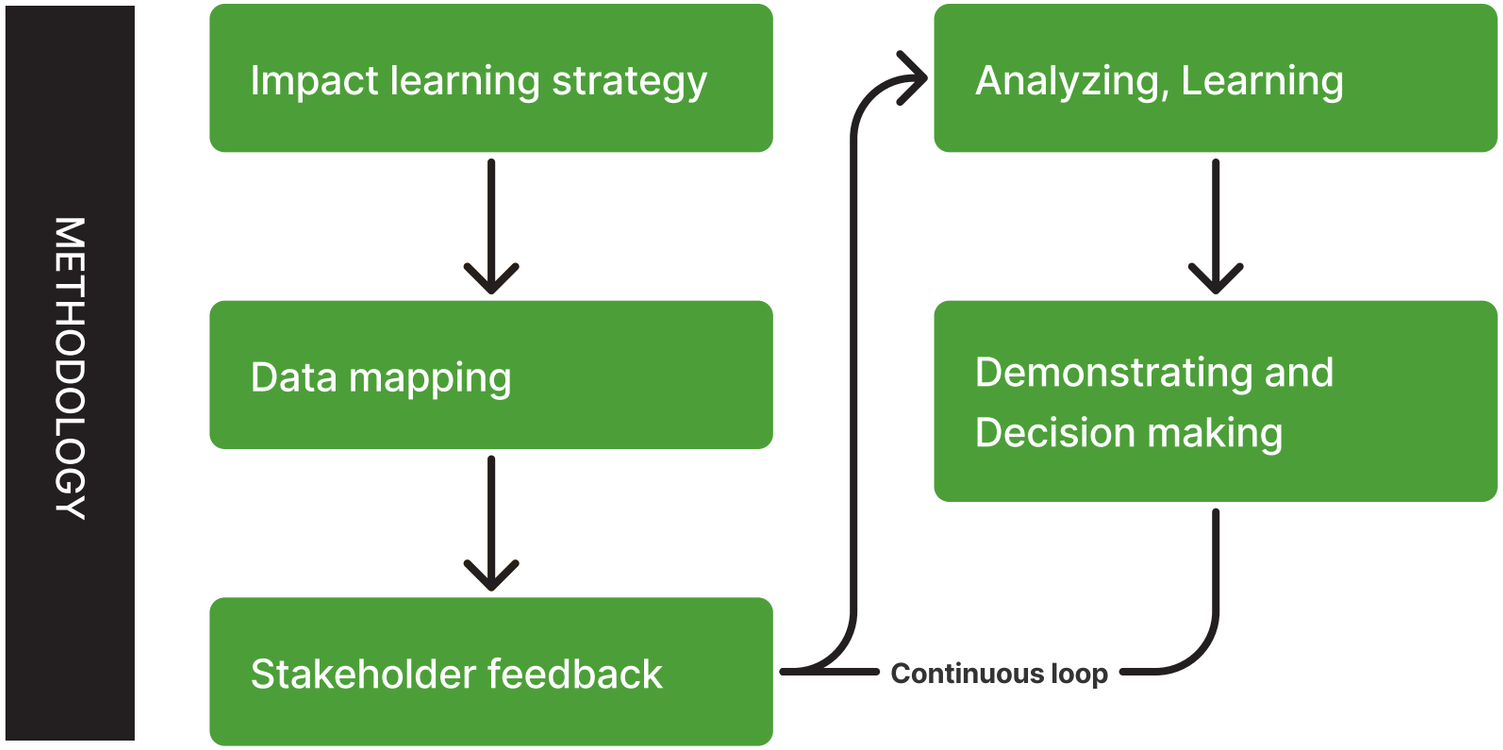
This report highlights the Lancaster County Science, Technology, Engineering, and Math (STEM) Alliance, an initiative supported by the Steinman Foundation that promotes economic and workforce development in Lancaster County. The STEM Alliance is governed by an Advisory Board made up of local leaders from the private sector, schools, universities, non-profits, and government. They provide guidance and advice to the Steinman Foundation in supporting STEM efforts and help coordinate the community's work to achieve a shared vision.

The goal is to create a STEM literacy and experiential learning hub in Lancaster County that will attract and retain visionary job creators, inspire learners of all ages to achieve academic excellence, and engage all citizens in building a prosperous future.

To achieve this, the STEM Alliance has identified six strategic priorities:

1. Community Awareness
2. Career Exploration
3. In-School Project-Based Learning
4. Out-of-School STEM Learning
5. Work-Based Learning
6. Diversity in STEM

How are we learning our outcomes?



Step 1: The defining stage of an early impact strategy is the most crucial step.

Step 2: Once data was mapped, we created surveys with the Sopact team for all the programs supported by Steinman Foundation in 2022.

Step 3: We collected baseline and end-line data where it was possible as stakeholder feedback.

Step 4: We mapped the relevant survey questions to the key indicators from all the programs to continuously learn from the community measures that the Impact Task Force approved.

Outcome 1
Increased knowledge of STEM careers

Metrics

★ **STEM Alliance Strategic Goals**

- Career Exploration
- In School Project-Based Learning
- Out-of-School STEM Learning

- Percentage of participants with new knowledge about the STEM careers

Outcome 2

Increased HARD AND SOFT STEM skills

Students participate in programs that show in a practical and fun way how STEM can be applied to solve the most pressing problems

Metrics

HARD STEM skills

- Percentage of participants learning technology and programming skills
- Percentage of participants improving their Math and Science scores
- Percentage of participants learning Engineering skills
- Percentage of participants gaining a certification

SOFT STEM skills

- Percentage of students demonstrating good communication skills
- Percentage of students demonstrating problem-solving skills
- Percentage of students demonstrating teamwork skills

★ **STEM Alliance Strategic Goals**

- Career Exploration
- In School Project-Based Learning
- Out-of-School STEM Learning

Metrics

- Percentage of participants expressing an interest to pursue a STEM career
- Percentage of participants feeling confident about their ability to pursue a STEM career
- Percentage of participants with improved awareness about the different STEM paths and skills required in pursuing them (Output metric)

Outcome 3

Family members providing guidance on STEM and/or support pursuing higher education

Metrics

- Parents/Guardians with new knowledge about STEM careers

★ **STEM Alliance Strategic Goals**

- Community Awareness,

Impact learning strategy through the **theory of change model**

“We need everybody to see what we’re seeing. The future is going to require STEM literacy. We need STEM in the home, we need STEM after school, we need STEM in the summer.”

-Sandy Strunk, Executive Director, Lancaster County STEM Alliance.

Photo by Jeswin Thomas on Unsplash

What is included in this report?

The results presented in this report will serve as a baseline measurement for some programs. With a consistent data collection process going forward, we will be able to compare results year after year or before and after each program.

Data collected from the following projects are presented in this report:

- Aviation Camp
- Bridge to Employment
- Summer Learnings
- All Star Code

In the future, we plan to monitor other STEM Alliance-supported programs by collecting data and drawing meaningful insights from it.

- Teachers as Temporary Workers
- Imagine Science (High school)
- Teacher Externships

Alignment to Impact Standards + Frameworks

United Nations Sustainable Development Goals and Target Alignments

The 2030 Agenda for Sustainable Development outlined 17 Sustainable Development Goals (SDGs) to help establish "peace and prosperity for people and the planet, now and into the future." These goals provide an impact framework to assess an entity's contribution towards "ending poverty and other deprivations," incorporating "strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests."
(THE 17 GOALS | sustainable development) Many organizations and enterprises use these SDGs as an impact framework.

SDG 4.3 -By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.

SDG 4.4 - By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

SDG 4.5 - By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples, and children in vulnerable situations.

SDG 5.b - Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.

SDG 8.2 - Achieve higher levels of economic productivity through diversification, technological upgrading, and innovation, including through a focus on high-value-added and labor-intensive sectors.

SDG 8.6 - By 2020, substantially reduce the proportion of youth not in employment, education, or training.

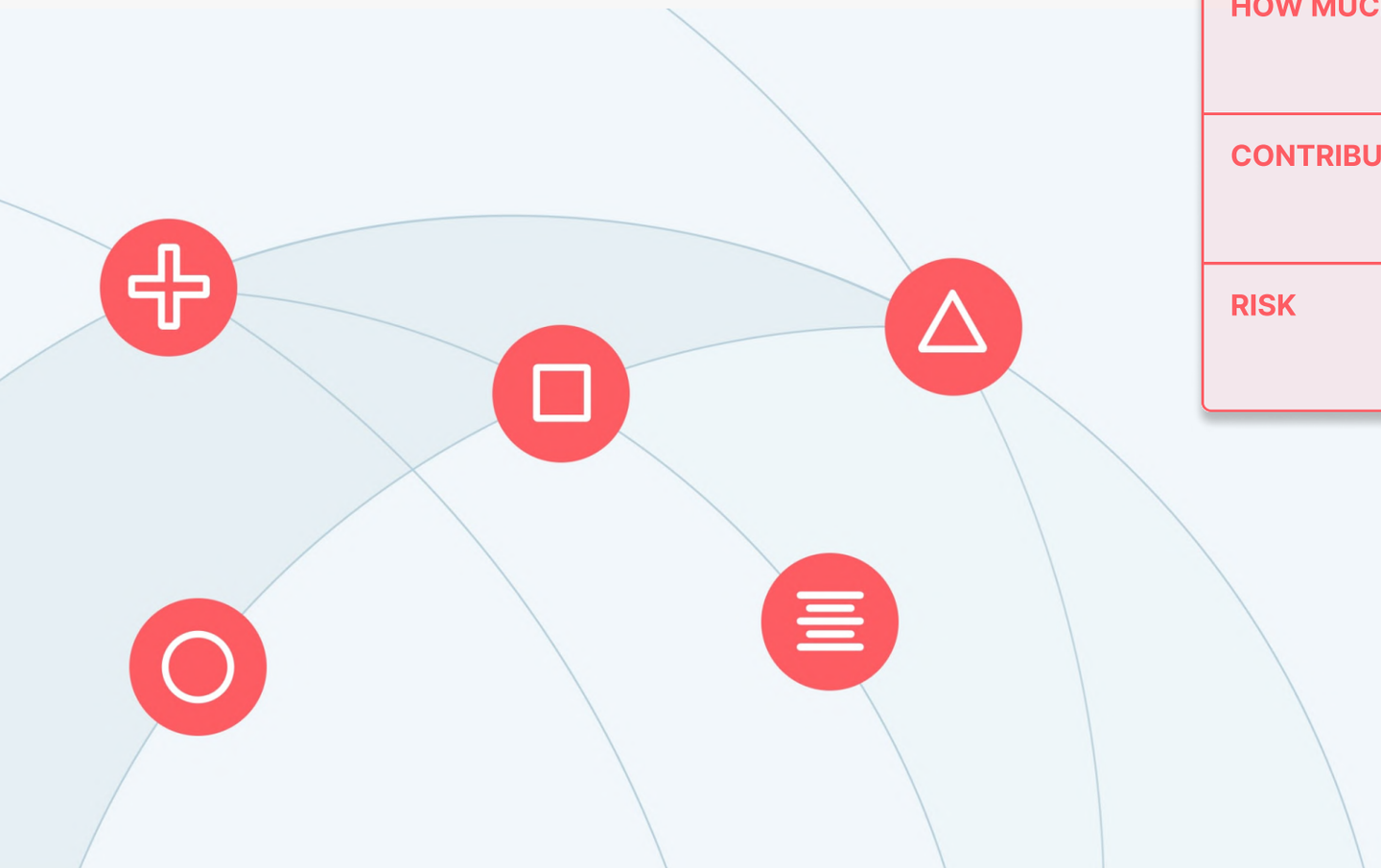
SDG 10.2 - By 2030, empower and promote the social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

https://sdgs.un.org/goals

Alignment to Impact Standards + Frameworks

Impact Management Project

The Impact Management Project (IMP) harnessed a practitioner community of over 2,000 investors, enterprises, and organizations to set norms for impact management techniques. Together, these parties built a consensus on measuring, assessing, and reporting social and environmental impact. They created a common logic for enterprises and investors to measure effects on people and the planet, intending to reduce negative and increase positive impact. The IMP framework is instrumental in understanding the stakeholder's voice.



IMPACT MANAGEMENT PROJECT

The Five Dimensions of Impact

Dimension	Guiding Question(s)
WHAT	What outcome(s) do business activities drive? How important are these outcomes to the people (or the planet) experiencing them?
WHO	Who experiences the outcomes? How underserved are the stakeholders?
HOW MUCH	To what extent do the outcomes occur, focusing on factors such as scale, depth, and duration?
CONTRIBUTION	What is the enterprise's contribution to the outcomes? What would have been likely to happen anyway?
RISK	Are there risks to people and the planet if the impact does not occur as expected? What are they?

Programs + Activities in 2022

1. Bridge to Employment

The Bridge to Employment program (BTE) aims to motivate and support young people from underprivileged communities to complete high school, excel academically, and achieve their career goals. BTE's specific objectives include increasing college enrollment and the proportion of students pursuing careers in STEM, design, manufacturing, and healthcare fields. This program is a collaboration between Johnson & Johnson, the School District of Lancaster (SDL), and the Lancaster STEM Alliance.

2. All-Star Code

All-Star Code is a six-week program that teaches coding, web development skills, and other essential abilities to a new generation of young men of color, providing economic opportunities in a technology-driven world. This program invites Lancaster County high school students for career and industry exploration, mentorship interactions, and an intensive coding crash course. The program includes hands-on learning, interactive content, virtual site visits, and company tours. The Steinman Foundation and Lancaster STEM Alliance are partners in this initiative.

3. Aviation Camp

The Aviation: Technicians, Engineers, Aviators, and Mechanics (A-TEAM) camp sparks high school students' imaginations toward aviation careers. The three-day program allows students to gain a better understanding of the technical aspects of flying through flight simulation and a training aircraft tour. The camp is co-hosted by the university, Aero-Tech Services, and the Lancaster STEM Alliance.

4. Summer Learnings
The Summer Learning Program aims to prevent summer learning loss for PreK through Grade 8 students and bridge the digital divide in Lancaster County, which may cause many county children to fall behind their peers. This program provides high-quality virtual learning opportunities throughout the summer break while emphasizing literacy and numeracy skills. Additionally, it offers virtual field trips, art and STEM enrichment activities, and social-emotional development, all taught by licensed instructors. The Lancaster Partnership for Learning Equity (LPLE) provides this five-week course, with support from the United Way of Lancaster County and the Steinman Foundation.

5. Teachers as Temporary Workers
Teachers as Temporary Workers is a five-week paid summer internship program that places teachers with one of LCSA's industry partners, who have positions that align with the teachers' skills. The temporary employment of teachers aims to foster closer connections between academic institutions and businesses and provide teachers with instruction on the skills, qualities, and information that employers value. Additionally, the program offers teachers a $500 stipend for integrating what they learn from the company into their regular classroom curriculum.

6. Teacher Externship
The Teacher Externship Program aims to improve teachers' understanding of the workforce that their students will enter and promote deeper relationships between educators and industry. The program also aims to equip teachers with the resources they need to teach their students the skills they will need to succeed in an ever-changing and increasingly technological job market. The Teacher Externship Program is a three-day workshop that incorporates STEM learning into teaching.

7. Imagine Science
The underlying idea behind Imagine Science is that sustained informal exposure The underlying idea behind Imagine Science is that sustained informal exposure to STEM subjects can ignite a child's interest and lay the groundwork for success in high school and beyond. Four of the top national youth organizations are working together to bridge the STEM gap by sparking the imaginations of historically underrepresented adolescents, with a particular emphasis on Lancaster County students in grades 4 through 8.

Impact Learnings

Outcome 1: Increased knowledge of STEM careers

Programs	• Aviation Camp • Bridge to Employment • Summer Learnings • All Star Code
Strategic Goals	• Career Exploration • In School Project-Based Learning • Out-of-School STEM Learning
Metric	• Percentage of participants with new knowledge about STEM careers

What is changing?

"**What**" dimension tells us what is the outcome that enterprise is contributing to, whether it is positive or negative, and how important the outcome is to stakeholders."

Percentage of participants gaining knowledge of STEM careers

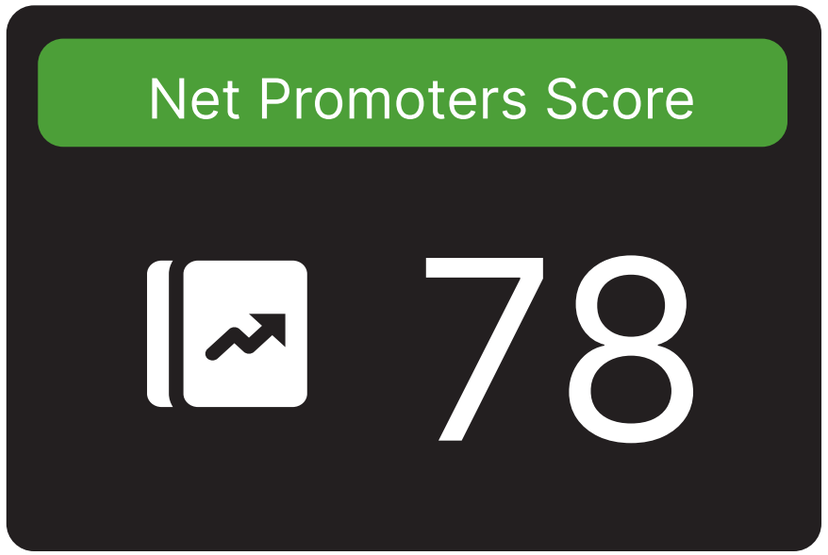
We collected data on various dimensions of knowledge related to STEM careers and the overall confidence level of students who participated in multiple programs.

The data shows that 100% of participants reported an increase in awareness and interest in STEM careers, while 82.4% reported feeling inspired by these fields.

Additionally, 100% of participants reported feeling confident about their abilities to pursue STEM careers, and 100% reported a positive attitude towards these fields.

These findings highlight the positive impact of STEM education programs in promoting awareness, interest, and confidence among students, and inspiring them to pursue careers in these exciting and dynamic fields.

Stakeholder Satisfaction Summer Learnings



Percentage of participants of AVIATION program increased their knowledge about Aviation

- 92.9% increased their knowledge about pilots and traffic controls
- 78.6% increased their knowledge about aviator mechanics
- 71.4% increased their knowledge technicians

The data shows that a significant percentage of individuals increased their knowledge about aviation.

Specifically, 92.9% reported an increase in their knowledge about pilots and traffic controls, 78.6% about aviator mechanics, and 71.4% about technicians.

These findings demonstrate the importance of ongoing education and training in the aviation industry.

Outcome 1: Increased knowledge of STEM careers

Participants with newly acquired aspirations for STEM

Programs	• Aviation Camp • Bridge to Employment • Summer Learnings • All Star Code
Strategic Goals	• Career Exploration • In School Project-Based Learning • Out-of-School STEM Learning
Metric	• Percentage of participants interested in pursuing a STEM career • Percentage of participants who understand the training and jobs in STEM • Percentage of participants to explore a STEM career path

Percentage of participants interested in pursuing a STEM career

92.3%

Percentage of participants who understand the training and jobs in STEM

100%

Percentage of participants inspired to explore a STEM career path

83.7%

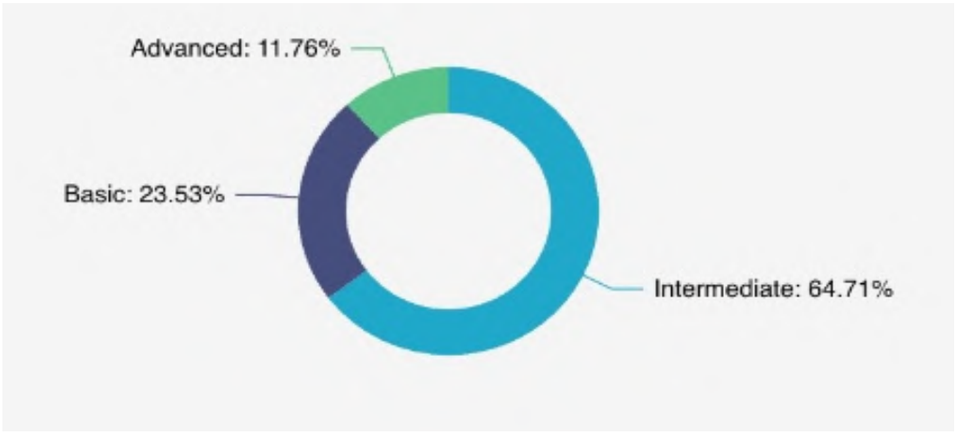
Outcome 2: Increased STEM Skills

Percentage of participants who gained STEM-related HARD skills

STEM related hard skills	Percentage
Improved academic performance	100%
Acquisition of new skills	91.4%
Improvement in STEM concepts	100%

The data table above summarizes the results of our study on STEM hard skills. All the participants reported improved academic performance, suggesting the transferability of these skills to academic success. The acquisition of new STEM skills was reported at 91.4%, indicating the ability to learn and apply new technical knowledge. Finally, 100% of participants reported improvement in their understanding of STEM concepts, highlighting the importance of these skills in both academic and professional settings.

Improved Coding Skills from All Star Code program



Participants with improved STEM skills

We consider "hard skills" associated with STEM the following:

1. Certifications
2. Academic performance in Math and Science
3. Technology and computers
4. Engineering-Design Thinking

Programs	• Aviation Camp • Bridge to Employment • Summer Learnings • All Star Code
Strategic Goals	• Career Exploration • In School Project-Based Learning • Out-of-School STEM Learning
Metric	SOFT STEM skills • Percentage of students demonstrating good communication skills • Percentage of students demonstrating problem-solving skills • Percentage of students demonstrating teamwork skills HARD STEM skills • Percentage of participants learning technology and programming skills • Percentage of participants improving their Math and Science scores • Percentage of participants learning Engineering skills • Percentage of participants gaining a certification

Outcome 2: Increased STEM Skills

Percentage of participants who gained STEM-related soft skills

We consider as "soft skills" associated with STEM the following:

1. Problem-solving
2. Communication
3 Teamwork
4. Resilience
5. Integrity

However, through our current programs and the data collected, we are only able to measure the first three traits.

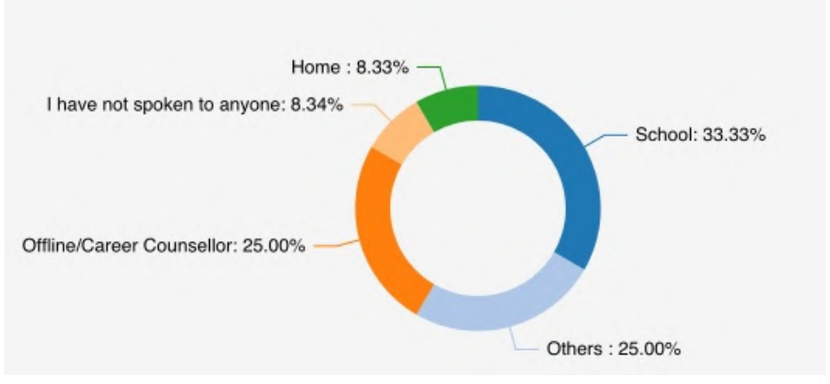
Participants gained soft STEM skills	Percentage
Problem solving skills	**100%**
Communication skills	**100%**
Team work skills	**91.3%**

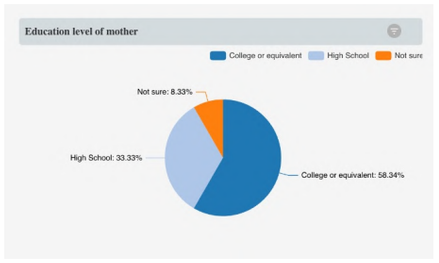
The soft STEM skills data reveals that all participants gained problem-solving and communication skills, indicating the effectiveness of the program in promoting these important abilities. Additionally, 91.3% of participants reported an improvement in teamwork skills, indicating that the program also helped individuals to develop their collaborative abilities.

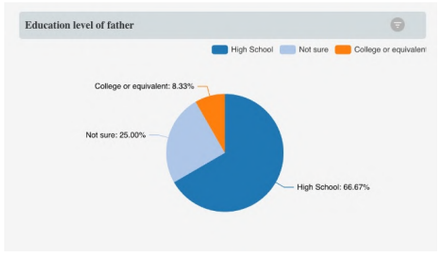
Programs	• Aviation Camp • Bridge to Employment • Summer Learnings • All Star Code
Strategic Goals	• Career Exploration • In School Project-Based Learning • Out-of-School STEM Learning
Metric	• Percentage of participants with STEM related SOFT skills

Outcome 3 Family support for pursing higher education and careers in STEM

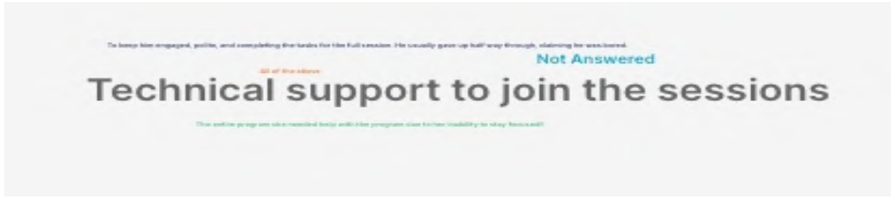
Sources of career advise







Support required from parents/guardians for online sessions



Parents/Guardian providing guidance on STEM and/or support pursuing higher education

Strategic Goal: Community Awareness

In order to gather more accurate data on this outcome in the future, we should make a deliberate effort to include family members in our program activities and feedback mechanisms. Parents play a significant role in shaping the future workforce of Lancaster County, but they often miss out on important discussions and strategy meetings due to various reasons.

Parents and guardians play a crucial role in guiding and supporting their children towards pursuing STEM fields and higher education. To achieve this, it is imperative to promote community awareness and parental engagement. This can be done by encouraging parents to:

- Provide access to educational materials and activities such as books, puzzles, and online resources from an early age.
- Provide opportunities for children to explore STEM subjects through classes, clubs, or extracurricular activities.
- Help develop children's problem-solving and critical thinking skills by engaging them in coding, robotics, and engineering activities.
- Allow children to make mistakes and learn from them.
- Develop children's STEM skills and knowledge through internships, research opportunities, and other hands-on experiences.
- Act as an emotional and financial support system for their children.

Diversity in STEM

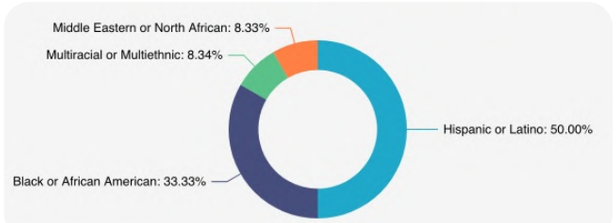
Who is experiencing the change?

"Who tells us which stakeholders are experiencing the outcome and how underserved they are in relation to the outcome."

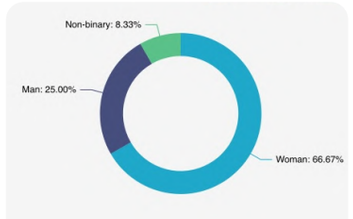
We want to help students in Lancaster County by giving them chances to learn about these fields by doing projects related to their future job. This will give us more ideas and ways of thinking and make progress and new ideas happen more often.

Bridge to Employment

Race / Ethnicity

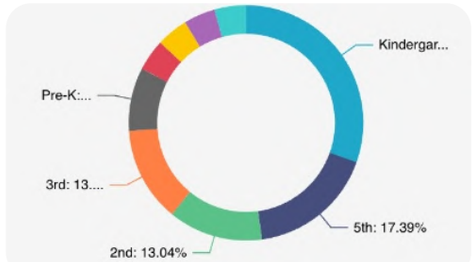


Gender

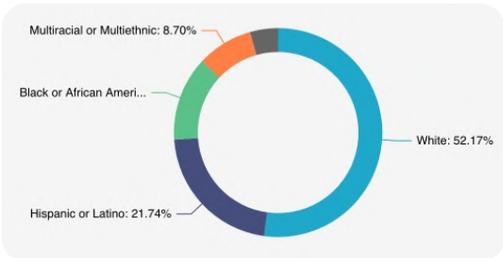


Summer Learnings

Participants Grade

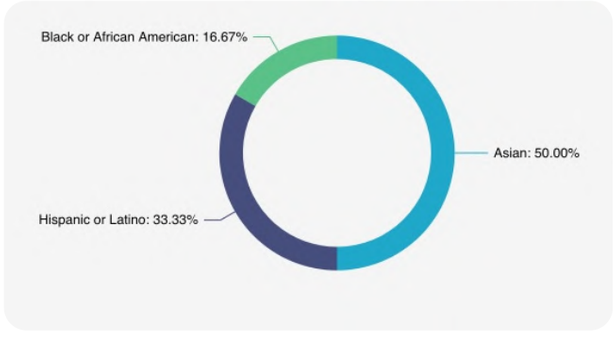


Students Race/Ethnicity



All Star Code

What is your race or ethnicity? [Pre-Survey]



Data we collected this year shows that different programs have different groups of people in terms of diversity.

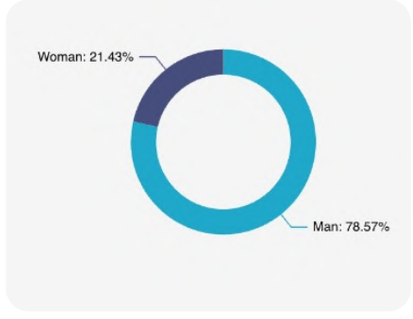
For example,

All-Star Code program was offered to boys only. In this program we reached to more Asian students compared to boys of any other race. Our goal is to reach more boys of color in future.

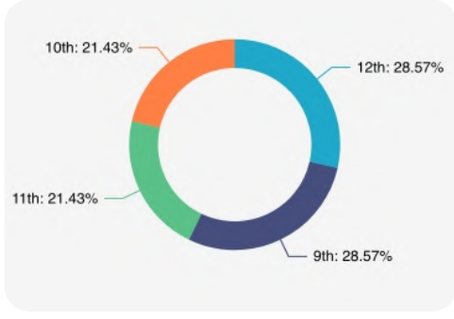
★ **All Star Code program was Boys only program**

Aviation Camp

Respondents' Gender



Respondents' school grade



How to increase diversity in STEM?

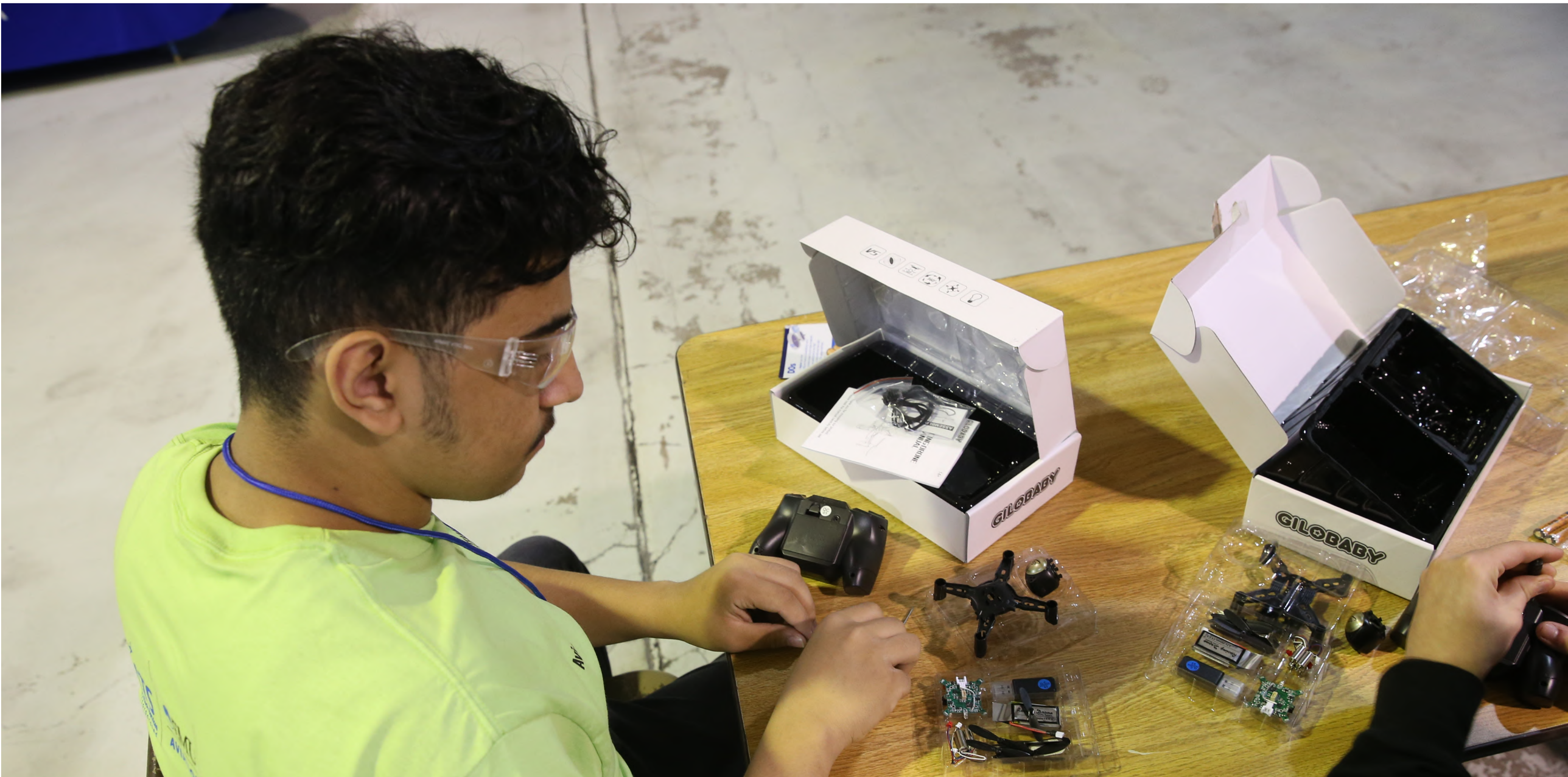
Through organizing and learning from the programs we conducted in 2022, we noted that increasing diversity in STEM programs is a complex and ongoing effort that requires the involvement and commitment of everyone in the organization and what works for one program may not work for another.

We will explore strategies to increase diversity in STEM programs in 2023.

1. Strategically reach out to students of underrepresented groups, such as girls, students of color, and low-income backgrounds.
2. Create a welcoming and inclusive environment where everyone is comfortable, heard, and respected.
3. Developing mentorship and support programs can help individuals from underrepresented groups feel more connected to the programs and the STEM field.
4. Increasing access to resources and support, such as tutoring, financial assistance, and other forms of support.
5. We will ensure that the curriculum is inclusive, representing different cultures, people, genders, and backgrounds.

Next Steps

1. Strategic Planning to identify STEM Alliance Priorities
2. Align Programming within Priorities
3. Identify Gaps within Programming and Initiatives
4. Develop and Implement Needed Services and Support for STEM Programming



Social Impact
Learnings 2022

Thank You

Impact report strategy, data, and research is powered by

sopact